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From the Front Office



Colonel Walter Augustin

Program Manager for Training Systems



Mr. Daniel Torgler

Deputy Program Manager for Training Systems

Welcome to the inaugural edition of the PM Training Systems (PM TRASYS) Products and Services Information Handbook. This booklet was created to provide you with a ready reference to assist with your training systems and services management requirements.

The PM TRASYS team is committed to providing superior training products and support services to our military customers. This handbook represents one of many initiatives we have undertaken to demonstrate our commitment to add value and enhance the quality of training systems and support services we are able to provide.

We hope you will find this handbook to be an effective information resource and that you refer to it often in support of your training systems management requirements. Please share this document with others who might have an interest in our unique mission and the many products and services we provide in support of our Marines. We envision the continued evolution of this handbook and welcome your comments and recommendations on how we can improve this document to better meet your needs.

These are exciting times to be involved in the military training enterprise. The advent of Training Transformation is providing us with unprecedented opportunities and the requisite resources to enhance or replace our legacy live, virtual, and constructive training systems and ranges. Your PM TRASYS team is an integral member of the Marine Corps' training transformation consortium and stands ready to support your emerging requirements.

A handwritten signature in black ink, appearing to read "W.H. Augustin".

Colonel W.H. Augustin

Program Manager, Training Systems



Mission: To serve as the Marine Corps' center of excellence in

Vision: We are the recognized leader in providing training solutions



Manpower & Training Analysis Division



Mr. Bill Franklin
Division Lead

Mission: To provide manpower and training analyses and support to Marine Corps ground programs and training.

The Manpower and Training Analysis Division was instrumental in the development and implementation of the MCSC Manpower and Training Process, a functional process under the Acquisition Logistics Core Processes that provides Manpower and Training Analyses and Manpower and Training Plans for MCSC acquisitions.

The Manpower and Training Analysis Division has developed a Manpower and Training Plan Outline that provides the general content and format for a MTP. Each plan has its own distinct attributes so no two plans are identical. PM TRASYS has also developed a Manpower and Training Manual that describes the systematic process necessary to provide the best possible manpower and training recommendations to support the new acquisition or allow examination of alternative system concepts early in the Weapon System Acquisition Process (WSAP). The processes described in this manual should be applied as early as possible in the acquisition process and be continually refined as information matures and changes occur.

Functions and Capabilities:

Manpower and Training Analysis (MTA) - A Manpower and Training Analysis ensures manpower and training considerations are integrated into the design effort of equipment, systems, and subsystems in order to improve total system performance and reduce costs of ownership by focusing attention on the capabilities and limitations of the Marine. An MTA also provides recommendations for the types and quantity of Marines, civilians and contractors required to operate and maintain a given weapon system as well as recommended training required for the Marines, civilian and contractors so they can properly operate and maintain that system. The results of the analysis are

documented in a Manpower & Training Plan (MTP). A Manpower and Training Analysis is required by the Marine Corps Systems Command (MCSC) Manpower and Training Process, which was approved by the MCSC Steering Team on 19 Dec 2002.

Training Situation Analysis (TSA) - A TSA is the systematic investigation of a training need or problem. TSAs verify the efficiency of a training system to meet existing training needs and to survey training programs and technologies for applicability to new training needs. A TSA determines whether a training requirement exists, defines the nature of the requirement, documents the existing training program, describes potential solutions, and presents a plan to implement the training solutions with applicable life cycle resource data. The results of the TSA are documented in a Training Situation Document.

Job Task Analyses (JTAs) - A JTA is used to obtain a detailed listing of tasks necessary to perform a specific job or duty. Job related data should include its purpose, functional responsibility of personnel, required support equipment and materials, and information on how the system works, is maintained, or is used. Collecting this data involves observing personnel in the work environment, interviewing job incumbents and supervisors, questionnaire surveys, and the study of applicable occupational field descriptions and related training documents.

Training System Functional Descriptions (TSFDs) - The TSFD defines the basic physical and functional baseline requirements of a training device as one component of a total training system. It describes how the training device will be developed in accordance with known constraints of cost, producibility, and supportability. The TSFD is used by training systems engineers to develop a specification for a training device. The TSFD should include information about the facilities and other logistics elements necessary to support the training device.

Contract Development and Monitoring - The Manpower and Training Analysis Division provides contract development assistance to MCSC Project Officers and Integrated Logistics Support Officers for procurement of training systems. Specifically, we can assist in writing the training sections of the Statement of Work (SOW) and the Contract Data Requirement List (CDRL). We can also assist in monitoring and evaluating the various training products such as curriculum materials, interactive multimedia instruction products, and interactive electronic technical manuals, etc.

Current Initiatives

The Manpower and Training Analysis Division is conducting numerous Manpower and Training Analyses, Job Task Analyses and Training Situation Analyses for MCSC and MCCDC.



The Manpower and Training Analysis Division has developed a new user interface strategy and design for the Statement of Work, Contract Data Requirements List (CDRL) and Tracking Tool (SCATT) and is actively working with the SCATT Project Officer and contractor support personnel to implement this strategy.

The Manpower and Training Analysis Division is actively involved with the Defense Training Standards Working Group (DTWSG). This forum is the formal body for developing and maintaining performance specifications and guidance documents for use in acquisition and development of education and training programs throughout the Department of Defense.

The Manpower and Training Analysis Division is actively involved with the Navy's effort to update its Navy Training System Plan Processes.

The Manpower and Training Analysis Division developed a Manpower and Training Process Certification Course for MCSC Logisticians and are currently conducting that training at Quantico and Albany.

The Manpower and Training Analysis Division works closely with MCCSC Total Force Structure Division and TECOM as part of the implementation of the Manpower and Training Process.

Future Initiatives - In the future, the Manpower and Training Analysis Division will:

- Provide Manpower and Training Process information to MCSC acquisition personnel at all levels to complete implementation of the process.
- Assist MCCDC with training their personnel on the MCSC Manpower and Training Process.
- Expand its internal and contractor support team to better serve our customers.
- Assist MCSC in the development of requirements for 7 new Manpower and Training Specialist billets in Quantico to provide Product Groups with internal training expertise.



Training Science & Technology Division



Mr. Martin Bushika

Division Lead

Mission: To develop and transition valued technologies to Marine Corps ground training.

Sponsors and Partners: Office of Naval Research (Expeditionary Warfare Division), Marine Corps Warfighting Laboratory

Program Thrusts Objectives:

- Training instrumentation and situational awareness technology
- Rapid synthetic environment database generation technology
- Tactical decision-making simulation technology
- Augmented cognition/enhanced human performance technology

As the Office of Naval Research (ONR) sponsored Technology Development Agent (TDA), the Program Manager for Training Systems (PM TRASYS) Science and Technology (S&T) Division develops and then transitions technologies to USMC ground training systems. The S&T Division works very closely with ONR, the Technology Developer; with Training and Education Command (TECOM), the Requirements Developer; with PM TRASYS, the Material Developer; with Marine Corps Warfighting Laboratory (MCWL) and with the Fleet Marine Force (FMF) to develop those technologies that provide the greatest benefit for Marine Corps ground training systems.

PM TRASYS S&T programs are training requirements focused. Any given USMC Mission has a Mission Essential Task List (METL). The METL then determines the Collective Training Standards (CTS) and Individual Training Standards (ITS) required to ensure training readiness for that mission. The CTS and ITS are the focus of each PM TRASYS S&T program.

Instrumentation and Situation Awareness Technology



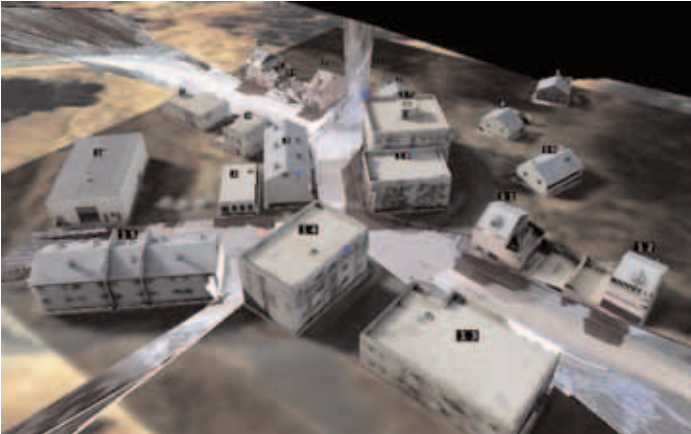
The purpose of developing Instrumentation and Situation Awareness Technology is to demonstrate affordable capability to enhance Close Quarters Battle (CQB) and Military Operations in Urban Terrain (MOUT) training. This capability will focus on a portable solution that can provide dismounted situational awareness and tracking instrumentation for fire team and small unit training.

Benefits include:

- Enhanced Situation Awareness capability for small units
- Portable non-virtual MOUT and CQB training capability for supporting improved mission planning and rehearsal



Synthetic Environment Technology



The purpose of developing Synthetic Environment Technologies is to support rapid and automated Three Dimensional (3D) scene generation that can capture and convert real world terrain and cultural features into 3D images to include CQB and MOUT environments.

Benefits include:

- Near real-time scene common database generation capability for virtual training systems
- Automated recognition of terrain and cultural features with pixel reduction
- Live video integrated with synthetic environment
- Live-Virtual integration for synthetic operational forces

Supporting technologies are:

Video Flashlight Technology - Video Flashlight technology provides mission rehearsal and review at a MOUT facility using a blanket of ground video cameras resulting in intuitive situational awareness. Camera video is fused and registered into a common dynamic 3D representation of the MOUT facility that can be manipulated and viewed from any direction. The system enables visualization of an integrated view of a 3D MOUT facility, combining video from multiple cameras. Users can move seamlessly about the space monitoring the facility from a bird's eye view. It allows a fly-down and zoom in view to examine specific activity up close. The system detects moving objects from all cameras and provides an integrated view of all motion in the MOUT facility and monitored zones. Data from other sensors, such as wireless Global Positioning System (GPS) and Radio Frequency (RF) identification tags, can be easily input into the system and displayed at the correct geographic location within the 3D representation of the facility. Tracks of movement by friendly and enemy warfighters can be shown. The system includes record and replay capability that is well suited for rehearsing and analyzing events.

Rapid 3D Database Generation Technology - This technology produces highly automatic rapid site model acquisition based on the use of Two Dimensional (2D) image sensors along with 3D range and position sensors. The resulting 3D model will be suitable as a synthetic environment for MOUT training and will enable increased Situational Awareness (SA) as part of the after action review process.

The 3D site models made from this process can be used with the Video Flashlight system to provide enhanced visualization and after action review of urban exercises. This effort will produce a design for an end-to-end process and system for highly automatic rapid site model acquisition; specify Commercial Off The Shelf/Government Off The Shelf (COTS/GOTS) components and services; and, develop the critical custom hardware and software elements. Geometry reconstruction, image-to-lidar registration, appearance reconstruction, and interactive model editing technology will be developed. The objective is to reduce the time required to create 3D model of a training area from months to days.

RF and Video tracking Fusion Technology - This technology is for location and identification of Marines and other individuals for the purpose of enhanced visualization and situational awareness for MOUT training. The proposed technology will employ RF tags and RF-based location determination, and enhance visualization of moving individuals and vehicles by combining the RF information with visual based tracking information. The proposed technology greatly enhances visualization and awareness currently provided by the Video Flashlight system.

Tactical Decision-making Simulation Technology



The USMC Family of Tactical Decision-making Simulations (TDSs) is being developed to demonstrate the effectiveness and affordability of low cost PC games to provide realistic scenario based training for individual Marines, small units, and Marine Air/Ground Task Force (MAGTF) staffs.

The desired capabilities include:

- Enhancement to formal instruction
- "Marine Corps Tactical Warfare System (MTWS) on a PC" capability that is CD-ROM based and provides war gaming.
- Multi-echelon, multi-player, network compatible with robust After Action Review (AAR).
- Multi-scenario high repetition cognitive skills training for all MAGTF elements.



- Warfighting experimentation and development of concepts and tactics for use by the Ground Combat Element (GCE), Combat Service Support Element (CSSE), Aviation Combat Element (ACE) and Command Element (CE) of a MAGTF.

The ultimate purpose of the USMC Family of TDSs is to provide: *Affordable training for Marines, anytime, anywhere!*

Programs and Descriptions

Close Combat Marine (CCM) GCE TDS - CCM is a real-time strategy TDS that teaches tactics at the team, fire team, squad, platoon, and company levels. The target audience is junior officers, NCOs, and SNCOs. CCM is CD ROM and PC Based and therefore deployable. It is designed to supplement field exercises, allowing instructors to create scenarios, which are run on desktop and laptop computers, either standalone or against an opponent on another computer. This TDS teaches cognitive (vice psychomotor) infantry tactical decision making skills for small unit Marine Corps leaders commanding teams/squads composing up to a Platoon (REIN). The training scenario duration is generally limited to less than two hours with up to six players in various configurations of one to one, one to many and many to many. In the one to one configuration, a Marine can engage another Marine or fight the computer's Artificial Intelligence.

MAGTF-XXI GCE TDS - MAGTF-XXI is a real-time strategy TDS that teaches tactics at the platoon, company and battalion levels. The target audience is Captains and SNCOs. MAGTF-XXI is CD ROM and PC Based and therefore deployable. It is designed to supplement field exercises, allowing instructors to create scenarios, which are run on desktop and laptop computers, either standalone or against an opponent on another computer. This TDS teaches cognitive (vice psychomotor) tactical decision making skills for Marine Corps leaders commanding platoons and companies. The training scenario duration is generally limited to less than two hours with up to six players in various configurations of one to one, one to many and many to many. In the one to one configuration, a Marine can engage another Marine or fight the computer's Artificial Intelligence.

Logistics CSSE TDS - The Logistics TDS under development for the Logistics School is a real-time strategy simulation targeted at training battlefield logistics to Lieutenants, Gunnery Sergeants, and Staff Sergeants in the following Combat Service Support Military Occupational Specialties (MOS):

- 0402 Logistics Officer
- 0430 Embarkation Officer
- 0431 Embarkation and Logistics Specialist
- 0451 Air Delivery Specialist
- 0481 Landing Support Specialist
- 0491 Combat Service Support Chief

The objective of the Logistics TDS is to leverage existing technology to develop a fast-paced, realistic logistics simulation that will force logisticians to apply all of their critical thinking and decision-making skills to insure that their Marine Expeditionary Unit (MEU) is operationally and logistically successful. Repeated simulation play is designed to enhance their skills as adaptive logistics commanders and planners.

The mission of the Logistics TDS is to teach Marines how to plan for the full spectrum of Combat Service Support in a forward deployed, expeditionary environment while enhancing the Marine's awareness of Combat Service Support. The Logistics TDS uses the best commercial practices and the latest video simulation technology to provide users with several unique MEU mission scenarios. Key logistic doctrine, concepts, and principles are highlighted by the play in each scenario. The basic concept for the simulation shall be as follows:

a. The simulation allows the student to primarily serve as a Combat Service Support Operations Center (CSSOC) Watch Officer with the MEU Service Support Group (MSSG) and utilize certain personnel and equipment in order to support the mission. Essentially, the student provides a full range of Combat Service Support that is beyond the organic capabilities of the major subordinate elements in the MEU. Most of these employment concepts involve tactical level decision making by the CSSOC Watch Officer. While the simulation plays at the tactical level of war, descriptions and functioning of weapon systems and formations are notional. This simulation is intended to show how the use of key logistic concepts enhances overall operational effectiveness.

b. Briefing. At the start of the simulation, the simulation allows students to read over a Mission, Enemy, Terrain and weather, Troops and fire support-Time available (METT-T), Space & Logistics, and then receive a briefing about the upcoming operation. Students can make several choices about how to run the first phase of the assault and how to support the MEU throughout its operation.

c. Assault wave. Once the assault wave is established ashore, the simulation provides the means for the students to carry out any necessary follow-on missions. The student provides support to the MEU over varying terrains such as desert, mountain, jungle, and urban. The student can manage rear area security while responding to support requests and launching Logistics Trains.

d. Computer and Student Actions. The simulation controls tactical units while the student will carry out support. The simulation allows the student's efforts to be consumed with the execution of support; failure of the student to provide effective logistics support results in a low score or mission failure.

Tactical Operations Marine Corps (TacOpsMC) Combat Engineering TDS

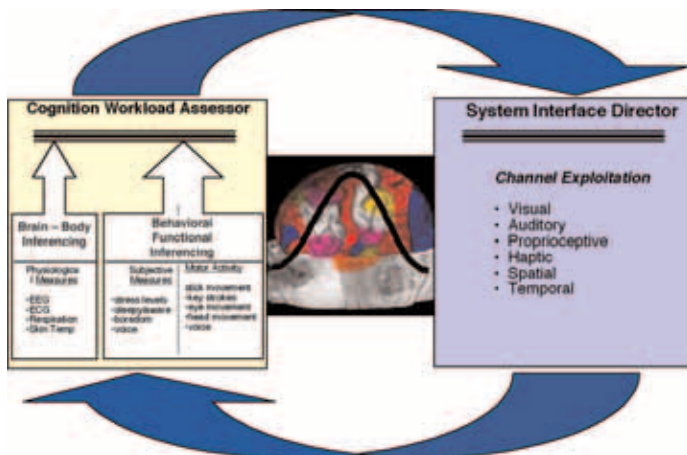
The TacOpsMC TDS under development for the Engineers School is a PC based, fast-paced, and tactically realistic computer-based simulation. The intent is for students, or the training audience, to be presented with a tactical situation for which they develop a plan. The students will then wargame their plan using the simulation, to provide feedback. The changing nature of the enemy will also force rapid decision-making. The simulation will be modeled to simulate the execution of combined arms operations at the Company and Battalion level and will cause the Engineer Officers to apply all of their critical thinking and decision-making skills while operating as a part of a simulated MAGTF. Repeated simulation play will enhance their skills as commanders and planners. The simulation can be played in a competitive free play mode to develop combat decision making skills. The simulation can also be used as part of a command post exercise scenario where planning is done prior to the simulation, then simulation data is used to provide feedback. Communications and



Command and Control personnel can be trained using the command post exercise mode. TacOpsMC is based on TacOpsCav developed and used by the US Army.

Anti-Terrorism Force Protection (ATFP) TDS - The ATFP TDS under development for the Marine Corps Security Forces (MCSF) Battalion is a PC based, fast-paced, and tactically realistic computer-based simulation. The ATFP TDS will provide training for armed, antiterrorism and physical security personnel involving the use of deadly force to protect designated installations. The intent is for students, or the training audience, to be presented with a tactical situation for which they develop a plan. The students will then war game their plan using the simulation to provide feedback. Repeated simulation play will enhance their skills. The simulation can be played in a competitive free play mode to develop combat decision making skills. The simulation can also be used as part of a command post exercise scenario where planning is done prior to the simulation, then simulation data is used to provide feedback.

Augmented Cognition/Enhanced Human Performance Technology



The purpose of developing Augmented Cognition/Enhanced Human Performance Technology is to:

- Demonstrate novel brain/machine symbiosis to augment human cognition and performance
- Improve asymmetric thinking
- Develop intuitive decision making
- Develop dominant speed of pattern recognition
- Enhance intellectual maneuvering

Programs will start in FY 04 to develop the capabilities described.



Training Systems Development Division



Mr. Daniel Torgler

Division Lead

Mission: To develop, procure and field Marine Corps Ground Training Systems.

Vision: Effectively and efficiently develop, procure and field Marine Corps Ground Training Systems that satisfy approved training requirements while aggressively seeking ways to reduce total ownership cost.

As the Marine Corps Systems Command Center for Excellence in Training, PM TRASYS responsibilities include procurement of nonstandard training systems and providing assistance to MCSC Principle End Item acquisition programs in procuring standard training systems.

Functions:

- Training Requirement Analysis
- Training System Conceptual Design
- Analysis of Alternatives
- Cost estimating and program objective memorandum inputs
- Training System Market Survey
- Training procurement assistance and consulting
- Training System Procurement
- Training Facility Planning and Preparation
- Training systems installation, test and delivery

The Systems Development Division is the acquisition arm of PM TRASYS. The main function is putting training systems into the hands of warfighters, so they may train and learn their tactics, techniques, and procedures to effectively accomplish their mission.

The focus for future training systems is to develop and provide a common training architecture that will allow Live-Virtual-Constructive training systems to be interoperable and work together seamlessly. The result would enable Marines to train MAGTF and Joint operations. Basically, the philosophy is to acquire training systems that will allow the warfighters to “train as they fight”.

In order to accomplish this goal of a common training architecture, the Systems Development Division will leverage off the work being accomplished by other division with PM TRASYS, Sister Services training components and industry.

What follows is a listing of the planned and ongoing procurements and support programs within the Training Systems Development Division.

Closed Loop Artillery Simulation System (CLASS) – CLASS will provide state-of-the-art, deployable interactive training for Marine Forward Observers (FOs), naval gunfire spotters, forward air controllers, fire support teams, Fire Direction Center (FDC) and howitzer crew personnel. CLASS will support a closed loop or stand alone operating mode between FO and FDC subsystems. CLASS is intended for training at the battery, battalion and regimental level. Three configurations of CLASS will be procured: 15 Garrison Deployable configurations, seven Shipboard Deployable configurations and six Classroom configurations.

CLASS will provide fully interactive, instructor-led training as well as independent, self-paced training. CLASS will be fully HLA compliant and incorporate the latest automated fire support C2 functionality. To the maximum extent practical, CLASS will leverage capabilities from like systems currently in use by USMC and US Army, (i.e., ISMT-E, FOTS, GuardFist and FS/CATT).

Combat Vehicle Training System (CVTS) – Combat Vehicle Training System (CVTS) will provide the Marine Corps the ability to train LAV-25, M1A1, and AAV crew members to the approved standards of combat skills and readiness. The end state system will be a deployable, high fidelity networked training system supporting individual, collective (crew, section, and platoon), combined arms, and joint training scenarios. CVTS will support gunnery proficiency, weapons platform familiarization, and tactical training. CVTS will provide a measurable improvement in individual, crew, and unit level tactical proficiency levels for tank, light armored reconnaissance and amphibious assault battalions. The system will train target acquisition, identification, and engagement with the weapons appropriate for each platform.



The CVTS project will provide a computer generated battlefield to include targets, target signatures, and weapon effects. Aural cues presented to the crews will consist of realistic environmental, platform, and weapon sounds. An instructor/operator will be able to control exercise selection, observe crew member actions, and conduct after-action reviews with the crews.

The CVTS - MIAI's are fielded training systems. The CVTS - LAV has a requirement for land-based and shipboard training applications. The land-based configuration is under contract and the shipboard configuration is an unfunded requirement. The CVTS - AAV is also an unfunded requirement.

Combined Arms Command and Control Upgrade System (CACCTUS) – The Combined Arms Staff Trainer (CAST) provides fire support training for the MAGTF elements up to and including the MEB level. The CAST System Upgrade (CACCTUS) will provide staff training for battalion and regimental size organizations as well as MAGTF headquarters staffs. It will support training to established training standards such as Mission Performance Standards (MPS) in support of the Mission Essential Task Listing (METL) and the Marine Corps Combat Readiness Evaluation (MCCRE) for all elements of the MAGTF.

CACCTUS will result in the upgrade of the Combined Arms Staff Trainers (5 total), providing more realistic training for MAGTF staff elements in fire support employment, coordination, and integration; and will provide interoperability between Marine Corps Ground training systems and the Joint National Training Capability (JNTC) Complex. In addition, the system will provide a robust after-action playback capability, more realistic C4I tactical data system and interoperate with operational communications equipment. All systems will be integrated through a common network architecture and will provide the ability to accomplish distributed training.

Deployable Virtual Training Environment (DVTE) – Deployable Virtual Training Environment (DVTE) is a first person skills sustainment trainer that trains Marines by using a simulation network with reconfigurable workstations capable of emulating a variety of weapon systems. Individuals select the weapon, vehicle, or leadership billet desired, then join a virtual battle space where others and synthetic forces are engaged in virtual operations. Individual MAGTF skills can be trained in this virtual environment using a semi-autonomous force model as its basis. The project responds to the need for a flexible, DEPLOYABLE, training system that provides combined arms MAGTF and Naval Integration training.

Currently a prototype desktop training network, the DVTE prototype addresses a significant subset of USMC combined arms. DVTE provides a custom-built Combined Arms Network (CAN) covering most USMC ground and air weapon systems, and is a USMC critical capability for JNTC participation. DVTE also serves as a platform for delivering individual and team training simulations, including a family of tactical decision games called the Infantry Tool Kit (ITK).

Distance Learning (DL) – DL is a USMC E-Learning Infrastructure that will enable Marines to receive training via the appropriate interactive media, when and where the learning is needed. DL will provide access to learning resources and performance support tools to a greater population of Marines. DL will increase the effectiveness of training and education through use of technology.

The Distance Learning architecture will consist of a number of data communication gateways, routers, and servers; interconnected with one another and their subscribers via a combination of wide area networks; metropolitan area networks, and local area networks. Learning Centers will consist of hardware and software applications that allow the Marine user to access interactive multimedia instruction, video teleconferencing, video teletraining and external multimedia training resources. A functional structure consisting of existing networked workstations and base, station, or reserve center Learning Resource Centers (LRCs) will be linked through the Marine Corps Base Telecommunications Infrastructure (BTI), currently under modernization, to one or more Area Learning Centers (ALC).

The ALCs, operating at the base and station level, provide a Training and Education Point Of Presence (TEPOP) to the Defense Information System Network (DISN), Defense Communication Telecommunications Network (DCTN) for VTC connectivity, and external access to other resources, such as the Internet.

Expeditionary Fighting Vehicle (EFV) Training System Program – The overall objectives for the Expeditionary Fighting Vehicle (EFV) Training System program is to design, test, field, and support the various training resources necessary to adequately train new EFV crews and veteran AAV Marines in the operations and maintenance of the EFV. The specific training tasks include vehicle familiarization and operations, primary and secondary weapon system gunnery techniques, communication and navigation, and command and control operations. The training devices needed to support the EFV training concept are Turret Simulators (Vehicle Commanders and Gunners), Driver Simulators, Maintenance Part Task Trainers and Communication/Navigation Part Task Trainers.

These training devices are to use a high fidelity training approach that replicates the actual EFV system performance characteristics and man-machine interfaces. The objective is to facilitate and enhance the student's transfer of training in both familiarization and skills proficiency. These training devices are to provide a method for measuring the level of student achievement concerning academic, hands-on skill training and retention.

Foreign Comparative Test (FCT) –

Deployable Target Systems (DTS) - Responds to the USMC requirement for a deployable targeting system that facilitates force-on-force unit and individual tactical training that can include:

- Mobil infantry and tank target system.
- Enables Marines to utilize Live or Simulated (MILES 2000) weapon effects.
- Captures detailed performance data for After Action Review (AAR).
- Deployable Instrumentation for MAGTF Training
- Provides force-on-force training for the Marine Air Ground Task Force.
- Position location reporting.
- Engagement adjudication of simulated direct and indirect fires.
- After-Action Reviews.



Special Effects Small Arms Marking System (SESAMS) - SESAMS is a user-installed weapons modification kit that allows the individual Marine to fire, at short range, a low velocity marking ammunition while precluding the weapon from firing live ammunition. SESAMS provides instantaneous feedback during force-on-force close quarter battle scenarios. This immediate visual and sensory feedback to the shooter and target without firing live ball ammunition reduces risk to participants and significantly reduces the maintenance costs to shooting houses.

Improved Moving Target Simulator (IMTS) – The Improved Moving Target Simulator (IMTS), is a Short Range Air Defense (SHORAD) weapons training system. The upgraded IMTS is a weapons proficiency trainer that provides computer generated aircraft and computer generated background images in a 360-degree dome. Real time weapon interface and student action monitoring are provided during scenario execution.

This system provides the Stinger gunner the opportunity to maintain proficiency for successful operation of the Stinger Manportable Air Defense System (MANPADS) using the latest technology. The training provided allows for three Stinger gunners to train simultaneously using proper techniques and skills to identify, acquire, track and launch Stinger missiles. The upgrade will provide for more realistic feedback and better video resolution.

This system will provide the Stinger Gunner and his Team Leader the opportunity to work on individual tracking skills, the proper acquiring methods and the gunners ability to properly launch his missile. The upgraded system allows the Stinger Section Leader to train with three teams at once resulting in improved training of the entire section.

The Section Leader will have the opportunity to interject malfunctions into the scenario that will cause the gunner to apply immediate action, or make a split timing decision. Thus providing a better trained SHORAD for the Marine Corps.

Indoor Simulated Marksmanship Trainer - Enhanced (ISMT-E) – The Indoor Simulated Marksmanship Trainer - Enhanced (ISMT-E) is an interactive audio/video weapons simulator that provides marksmanship training, weapons employment training, and tactical decision making training for a variety of small arms. The training system consists of infantry weapons that are instrumented with lasers which enable Marines to simulate engaging numerous target types in lanes, video, and CGI scenarios. The scenarios replicate range firing for qualification on basic infantry weapons, tactical weapons employment training, and shoot/no- shoot scenarios.

The ISMT provides training for up to four shooters per system. An Infantry Squad Trainer (IST) links 3 ISMTs together and provides training for up to 12 shooters in a squad. The ISMT-E upgrade supports up to five firing positions per system and 15 Marines per IST-E. The ISMT trainer uses video discs and lanes imagery to train marksmanship skills. The ISMT-E portrays video scenarios with DVD, utilizes lanes imagery for marksmanship training, and has the flexibility for Marines to author CGI scenarios for tactical employment training. Both configurations, the ISMT and ISMT-E, replicate marksmanship qualification ranges and judgmental shoot/no-shoot situations. Both configurations also have a computer-based instructor control station which allows the operator to select and control all training while providing comprehensive diagnostic, replay, feedback, and scoring capabilities. The ISMT-E/IST-E can also provide

forward observer, FAC, and indirect fire training. Other system capabilities include scenario development, target authoring, video branching, and night vision device training. The ISMT-E will be permanently installed on board the LPD-17. ISMTs are fielded across the Marine Corps at formal schools, infantry regiments, the Wing, MSG, Security Forces, and Reserve locations.

Joint National Training Center (JNTC) Enabling Technologies (JET) – JET provides needed communication and data infrastructure and translators to converge multiple geographically separated live training range actions and simulated actions within a single joint command and control structure. The Marine Corps JNTC strategy is to integrate Live, Virtual, and Constructive (L-V-C) training environments currently utilized or being developed. Critical foundations of L-V-C training are development of a deployable range instrumentation system providing ground truth position and scoring feedback, development of a deployable virtual training capability with mission rehearsal capability, and development of JET providing an overarching command and control training system that integrates the L-V-C training environment.

MAGTF Tactical Warfare Simulation (MTWS) – MAGTF Tactical Warfare Simulation (MTWS) is the Marine Corps advanced tactical combat simulation designed as a decision support system in real and constructive environments to augment Marine Corps Command and Control systems. MTWS provides interactive, multi-sided, force-on-force, real-time modeling and simulation for stand-alone tactical combat scenarios for air, ground, surface, and amphibious operations. The system supports tactical decision-making, and evaluation; operational planning and evaluation; and global wargaming. The system is also capable of integrating with other service models of the Joint Training Confederation (JTC) through the Aggregate Level Simulation Protocol (ALSP).

MAGTF Training Systems Support (MTSS) – The MAGTF Training Systems Support effort encompasses training support in the areas of command and control systems and supporting C4I applications, technical simulation support services, I/T Instruction and Support Services for MSTP, each of the MEFs, the MAGTF Training Command located in 29 Palms, and MARFORPAC.

Medium Tactical Vehicle Replacement - Training System (MTVR-TS) – MTVR-TS is a combined operator and maintenance training system designed to support fielding and sustainment of the Marine Corps new medium tactical vehicle. The MTVR-TS is comprised of a mix of Operator-Driver Simulators (ODSs), Electronic Classrooms (ECs), and interactive EC-based courseware that together provides the basis for all Motor Transport training in the Marine Corps.

The MTVR-TS supports modern, state-of-the-art operator training in the Marine Corps Motor Vehicle Operator Course (MVOC) at Fort Leonard Wood, MO. The MTVR-TS also provides comprehensive maintenance training in the Automotive Organizational Maintenance Course (AOMC) at Camp Johnson, NC. Additionally, ODSs located at Camp Courtney, Okinawa support sensitive, on-island driver training for III MEF operators in Japan.

Minor Training Devices (MTD) – The MTD program provides instructional support equipment to the Schools of Infantry, Recruit Depots and support combat readiness by being available to other units through local Combat Visual Information Centers. These training devices such as Climbing Walls, PITS, models and mockups, and



firearms enhance basic occupational and combat skills including tactics, weapons instruction and proficiency. MTD items are intrinsically of small cost and quantity, therefore a wide variety of items are procured through the MTD program.

Modular Amphibious Egress Trainer (MAET) – MAET is a modular trainer that provides underwater disorientation training for non-aircrew “frequent flyer” passengers. The trainer simulates underwater disorientation caused by rapidly sinking vehicles and replicates the following platforms: CH-46, CH-53, MV-22, LAV-25, AAV and AAV. The trainer and associated training program will train “frequent flyer” passengers aboard these craft. The trainer serves as a portion of an overall survival training program for non-aircrew “frequent flyers” that includes Shallow Water Egress Training (SWET) and Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD) familiarization and usage training.

Multiple Integrated Laser Engagement System - 2000 (MILES-2000) – MILES-2000 provides a family of low power, eye safe lasers which simulates the direct fire characteristics of infantry assault, armor, anti-armor mechanized weapons system and provides the gunner with hit or miss determination. MILES-2000 is designed for use by MAGTF as a force-on-force engagement simulation training system.

MILES-2000 Components include:

- Individual Weapon Systems
(M16, M249, M2, M40A1, M240G)
- Anti-armor Weapons
(AT-4, SMAW, TOW)
- Combat Vehicle Systems
(M1A1, LAV family, AAV family)
- Independent Target Systems (ITS) for structures
- Combat Support Vehicle Systems
(M900, LVS, HMMWV)
- Pyrotechnic Devices
(Main Gun Signature Simulator)
- Controller Device/Training Data Transfer Device
(CD/TDTD)
- MILES Target Interface Device
(moving and stationary targets)
- Automated Small Arms Alignment Fixture
(ASAAP)

Range Instrumentation Systems (RIS) – RIS will be an integrated data collection, dissemination, processing, and display and control system designed to provide realistic training to mission-organized Marine units operating in force-on-force and live-fire training environments. RIS will consist of hardware and software components that provide for the instrumentation of participant aircraft, ground vehicles, and personnel; a near real-time communications and C2 infrastructure; and an extensive After-Action Review (AAR) and post-mission debriefing and analysis capability. RIS provides immediate feedback and captures detailed information concerning the performance of individual Marines and collective units. RIS quantifies training performance by replacing subjective assessments with measurable data that can be examined during and after selected training events.

Remote Engagement Targets (RETS) – RETS is a computer controlled automated system of weather resistant stationary pop-up and moving targets for infantry, armor, and anti-armor training. The system offers computer-driven programmed tactical scenarios or it can be operated in a manual mode with group or individual targets raised on command. The number of scenarios are limited only by the quantity and type of targets and the imagination of the users. There are several different configurations of the system and several variations within each configuration.

RETS Ranges have been installed at various locations within the Marine Corps and will support FMF and base units live-fire training requirements for all ground direct fire weapons to include combat vehicles employing field firing techniques.

RETS will significantly enhance the capability to train individual Marines, crew-served weapons teams, small units, and combat vehicle crews in the employment of their weapons systems under the most realistic combat conditions possible.



Operational Support Division



Capt Antonio Scoffield

Division Lead

Mission: To provide product life cycle support including: planning, on-site, in-service engineering; maintenance; and technical modifications of Marine Corps Ground Training Systems.

Overview

The Operational Support Division functions as acquisition and lifecycle logistics managers who assist in the development of comprehensive logistics planning throughout the system development and lifecycle sustainment phases for Marine Corps ground training systems, devices and simulations from conception to disposition. This responsibility also includes providing support for training systems operation and maintenance during the lifecycle.

Functions and Capabilities

- Comprehensive Life Cycle Sustainment Planning
- Configuration Management
- Data Management
- Inventory Management
- In-Service Engineering Support
- Life Cycle Cost Generation
- Device Retirement & Disposal
- Service Life Extensions & System Upgrades

Fielded Training System Support

In-Service Engineering Offices (ISEO) - The most effective location to perform lifecycle support and configuration management of training devices is at the trainer/training system sites. This is due to the requirement for frequent communications between customers, suppliers, and end users relative to the installation, test, and support of hardware, software, firmware, documentation, interactive courseware, and logistics technical data.

ISEO's Mission

The In-Service Engineering Offices provide localized, cost-effective technical operation, engineering and lifecycle support for Marine Corps ground training systems from the initial system acquisition through retirement.

ISEO Functions and Capabilities

- Provide engineering services and technical liaison with the training commands and other such commands that possess training systems/devices.
- Develop, incorporate, and test quick-response modifications or emergent engineering changes for training systems/devices.
- Provide configuration management and status accounting support of Marine Corps ground training systems/devices.
- Establish and control an on-site technical library of training systems/devices documentation
- Develop engineering analysis, feasibility studies, and cost & lead-time estimates (C<E's) for proposed training system/device change requests.
- Process training system/device equipment change requests (TECR's) and prepare training system/device equipment change directives (TECD's) in the development of hardware, software, and documentation modifications.
- Provide engineering services in the acquisition of training system/device hardware, software and documentation.
- Provide front-line Casualty Report (CASREP) investigation, response, and correction.
- Assist project, engineers and fleet project teams in training system/device acceptance testing.
- Assist in trainer facility support as appropriate.
- Assist in the performance of Training Situation Analyses (TSA), Requirements Analysis, and Manpower and Training Analyses.



In-Service Engineering Offices - The In-Service Engineering Offices are located at the following major Marine Corps installations:

- Marine Corps Base Camp Lejeune, NC
- Marine Corps Service Support Schools, Camp Johnson, NC
- Marine Corps Base Camp Pendleton
- Marine Air Ground Task Force Training Center, 29 Palms, CA
- Marine Corps Base, Hawaii
- Marine Corps Base, Camp Butler, Okinawa Japan

Regional Contractor Operation and Maintenance of Simulators Lifecycle Support Program

The Contractor Operation and Maintenance of Simulators (COMS) Program exists to provide continuous life-cycle support for fielded Marine Corps ground training systems and live-fire ranges through the administration of commercial contracts with competent small business contractors. A single contractor is responsible for operating and/or maintaining various training devices and ranges within a geographical area.

There are three (3) COMS contracts that service specific Operating Forces and Supporting Establishments on the East Coast, West Coast and Western Pacific geographic regions.



Aviation Liaison Division



LtCol Brad Valdyke

Division Lead

Mission: To facilitate the development and fielding of USMC aviation training systems across the continuum of the Air Combat Element.

The Aviation Liaison Division facilitates the development and fielding of USMC aviation training systems across the continuum of Air Combat Element (ACE) training needs. Liaison team members coordinate requirements, participate in system development, and interface between the acquisition community (Naval Air Systems Command (NAVAIRSYSCOM) and Marine Corps Systems Command (MCSC), and the fleet during the procurement and fielding of training systems. The Aviation Liaison Division's unique vantage point provides optimum opportunity to ensure coordination and interoperability of all aviation and ground training systems. Our goal is to coordinate training systems; allowing Marines to train like the Marine Air-Ground Task Force fights!

The Aviation Liaison Division works within the NAVAIR Training Systems Division (NAVAIR-TSD) Program Directorate for Aviation (PDA), and is co-located with the MCSC Program Manager for Training Systems (PM TRASYS) in Orlando, Florida. Division members are Executive Members on the Marine Aviation Training Steering Committee (MATSC), which is tasked by the Deputy Commandant for Aviation to implement Marine Corps Aviation Training plans and policy as established in the Aviation Campaign Plan. Other members include Headquarters Marine Corps (APW-71), NAVAIR PMA-205, USMC Training and Education Command (TECOM), and representatives from each of the Marine Aircraft Wings. Location and membership supports the predominate role of the Aviation Liaison Division to interface with and support fleet participation in aviation training system acquisitions.

Convergent MAGTF Training Strategy

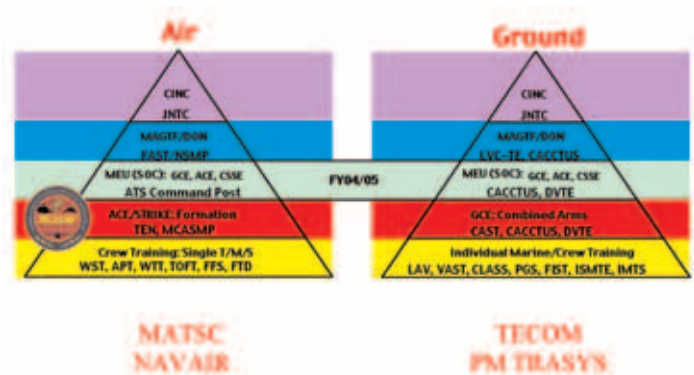


Figure 1. Air/Ground M&S Interoperability

Effectiveness of the Aviation Liaison Division as members of the MATSC is measured in terms of these key performance elements:

- Timely prioritization and validation of aviation training requirements
- Application of industry best practices to aviation training
- Enhance standardization in aviation training
- Delivery of on-time, tactically relevant aviation training
- Provision of systems creating affordable aviation mission readiness

Enabling principles of the Aviation Liaison Division to achieve these goals are:

Integrity to the Fleet. Keep the fleet informed by abiding to basic Corps values in all operations. Tell the truth, abide to commitments, consider the interests of all stakeholders, and be candid about shortcomings and challenges. Make sure that business integrity drives every aspect of team operations.

Fleet Project Team participation is essential. The fleet crewmember and maintainer is the customer. Early and frequent participation and consultation with the fleet ensures delivery of value.

Training objectives guide training solutions. Training is a human endeavor - not a technological challenge. Clarity of training objectives, tasks, and requirements points to effective and suitable solutions and opportunities. Technology for technology's sake does not train Marines. Know, understand, and document the training task before attempting to develop a solution.



Deliver the right value to each group of stakeholders.

Operational communities focus on daily obstacles. Planners focus on long-term resourcing. Delivering sound training solutions to the fleet requires an awareness and understanding of both challenges.

Get out and see the environment. Frequent and regular observation of military services, government agencies, and industry serves the customer. Understand the peril of obsolescence and manage it continuously. Develop a proactive approach to monitoring the environment and communicate the ongoing changes to the team in the face of its own challenges.

Ask every day “What have I done for the fleet today?”

Aviation Liaison Division GOALS and STRATEGIES:

GOAL #1 Ensure timely prioritization and validation of aviation training requirements to support acquisition strategy development and execution.

Strategies:

- Assist fleet training audiences to identify and define their outcome based training requirements.
- Assist fleet and acquisition personnel to understand in operationally significant terms, both the benefits and limitations of technology applied to training devices and solutions.
- Perform review on USMC aviation training related requirements staffed through the Naval Aviation Manpower and Training Branch (N789) and the Marine Corps Combat Development Process.
- Review procurement documentation, specifications, and statements of work to ensure correct incorporation and reflection of performance based requirements.
- Recommend Training and Readiness (T&R) syllabus changes reflective of the contribution to readiness of available and planned training systems.

GOAL #2 Apply industry best practices to aviation training solutions.

Strategies:

- Continuously survey industry and military training to identify noted best practices and strategies.
- Support Instructional Systems Development (ISD) front-end analysis and definition.
- Assist in weighing cost, schedule, and performance tradeoffs among Commercial Off The Shelf (COTS), Government Off The Shelf (GOTS), and developmental solutions to requirements.
- Identify high-risk applications of technology - avoiding “silver bullet” solutions.

GOAL #3 Enhance standardization in aviation training.

Strategies:

- Justify and assist implementation of an aircrew training device certification process connecting fidelity levels of the training device to experience credit granted for training performed.
- Recommend T&R syllabus changes that incorporate human performance elements appropriate for instruction during simulation-based training.
- Seek opportunities to bring other crewmembers and command and control nodes into common training environments.
- Seek opportunities to incorporate solutions reducing performance and schedule variances in training thereby providing student output of known capability back to the fleet.

GOAL #4 Ensure delivery of on-time, tactically relevant aviation training solutions.

Strategies:

- Influence timely delivery of training systems in coordination with weapon system fielding plans.
- Identify high-risk programs and instances of unmitigated risk.
- Monitor configuration concurrency between aviation training devices and corresponding weapon system platforms.
- Roadmap aviation tactical training to MAGTF, Joint, and Coalition distributed tactical training requirements and efforts.

GOAL #5 Assist in creation of systems that provide affordable aviation mission readiness.

Strategies:

- Evaluate training solution alternatives guiding selection that maximizes training effectiveness.
- Be the advocate for aviation Fleet Project Team participation in training acquisitions thereby ensuring operational inputs are brought to bear upon program acquisition and engineering decisions.
- Identify and leverage new techniques and means of providing training through the use of simulation, data communications, information systems, and deployable training solutions to enhance training effectiveness.
- Assist NAVAIR and MCSC justify and obtain a share of the defense budget proportional to the contribution training systems provide to Marine Corps readiness and effectiveness.



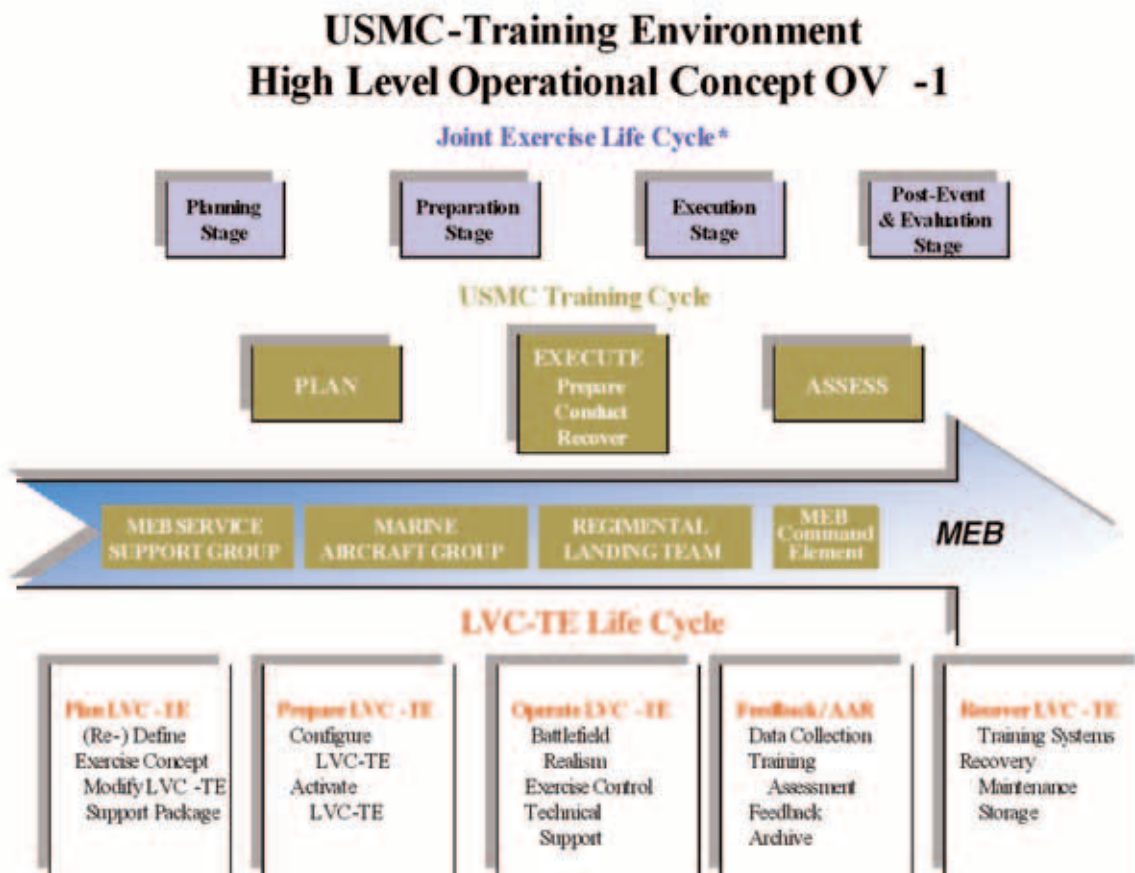
Marine Corps Live, Virtual, Constructive Training Environment Architecture

The Marine Corps Systems Command (MCSC) Program Manager for Training Systems (PM TRASYS) has recently initiated an effort to document the architecture of the USMC Training Environment (TE). Immediate focus is upon the domain of Live, Virtual and Constructive (LVC) training systems procured by PM TRASYS. Today that LVC domain generally consists of RIS, MOUT-RIS, CACCTUS, DVTE, MTWS, JET, RETS/PITS, MILES 2000, and ISMT-E. The near-term goal is to provide a comprehensive basis for integration of these programs to meet existing Marine Corps training requirements. These requirements are strongly influenced by the requirements of JNTC/T2 (OSD's Joint National Training Capability & Training Transformation initiatives). The JNTC Implementation Plan specifically calls for the Services to develop a training system architecture in accordance with DoD Architecture Framework. The LVC-TE Architecture will be developed to map where, how, when training systems will fit within the Marine Corps Integrated Architecture Picture (MCIAP).

The Live, Virtual, Constructive Training Environment (LVC-TE) Architecture Description will be developed to describe the fundamental relationships among training systems, tactical systems and units of a MAGTF, and the Joint National Training Capability. These relationships — interoperability, sustainability, and suitability

— are established for each phase of the LVC-TE Life Cycle as its components are planned, prepared, operated, and recovered in the course of supporting Marine Corps and Joint training.

The processes for articulating LVC-TE Architecture Description will provide logical and methodical “system of systems” processes to manage the integration and interoperability of training systems independently and integrated with C4ISR and other tactical systems. The LVC-TE Architecture Description will establish the fundamental interoperability, sustainability, and suitability relationships among its training systems, the tactical systems and units of the MAGTF, and the JNTC necessary to create the synthetic training environment(s) for Marine Corps Service and Joint training. The end users of the LVC-TE Architecture Description are PM TRASYS and other developers of Marine Corps training systems. The LVC-TE Architecture Description will be a living document subject to periodic updates to support evolving training requirements, advances in enabling technologies, the development of new training systems, and adjustments in DoD business practices.





Marine Corps Ground Training Consortium



PM TRASYS works in close partnership with several organizations to provide the best training solutions possible for Marines. The above poster was developed to recognize the cooperative, coordinated and synergistic interactions that occur among PM TRASYS, the Marine Corps Combat Development Command, the Office of Naval Research and the Warfighting Laboratory. The independent and interactive efforts in the area of training by each of these organizations focuses on developing the best training technologies and delivering the most effective training possible. This informal consortium is working well to provide new and improved Marine Corps Ground training capabilities.

A key member and the primary recipient of the products from this consortium is the Marine Corps Training and Education Command (TECOM). Featured below is a description of TECOM, their organization, mission and their interest in the continued success of this partnership.

Marine Corps Training And Education Command Quantico, Virginia

Mission: The mission of Training and Education Command (TECOM) is to “Develop, coordinate, resource, execute, and evaluate training and education concepts, policies, plans, and programs to ensure Marines are prepared to meet the challenges of present and future operational environments”.

Organization

TECOM was established within the Marine Corps Combat Development Command (MCCDC) on 1 July 2000. The seven subordinate TECOM commands are: Training Command (TRNGCOM), Education Command (EDCOM), MAGTF Training Command (MAGTF TRNG CMD), MCRD's Parris Island, and San Diego, Marine Aviation Weapons Training Squadron-1 (MAWTS-1), and Mountain Warfare Training Center (MWTC). These commands are collectively responsible for the activities set forth in the Training and Education Command mission. The Commanding Generals of the Recruit Depots also have recruiting responsibilities for which they report to the Marine Corps Recruiting Command (MCRC).

Training Command coordinates, resources, executes and evaluates training concepts, policies, plans and programs to ensure Marines are trained to a common standard in order to meet the challenges of present and future operational environments.

Education Command develops, executes, and evaluates professional military education focusing on leadership and our core competencies through resident and distance education Programs in order to prepare students to meet the challenges of present and future operational environments.

Marine Air Ground Task Force Command's two-fold mission is to operate the Marine Corps Air Ground Combat Center for live fire combined arms training that promotes readiness of operating forces; and provide facilities, services, and support, responsive to the needs of tenant commands, Marines, Sailors and their families.

MCRDs Parris Island and San Diego make basic Marines-disciplined and directed individuals imbued with the unique character, fitness and spirit that are the hallmark of Marines.

Marine Aviation Weapons Training Squadron-1 provides standardized advanced tactical training and certification of unit instructor qualifications that support Marine Aviation Training and Readiness and to provide assistance in the development and employment of aviation weapons and tactics.

Mountain Warfare Training Center is the Marine Corps' institute for training in mountain and cold weather warfare. MCMWTC conducts formal schools for individuals and battalion training in summer and winter mountain operations.

THE TECOM/MCSC PARTNERSHIP

No matter what challenges the Marine Corps faces in today's ever changing world one task remains unchanged: Placing Marines and their equipment at the right place and time ready to answer the nations call. Training and education are the underpinnings to achieving this task. This training and education occurs by way of the training continuum throughout each Marine's career or completion of obligation.

The partnership between TECOM and MCSC exist to fill the requirement to match training and education solutions to new acquisition processes and combat systems. These training solutions are achieved through detailed analysis of skills required to effectively and safely operate and employ each new system. This analysis further determines the most effective means to impart these required skills as well as the life cycle cost in the way of funding, support equipment, facilities and training personnel. The strength and success of each and every acquisition depends on this partnership.

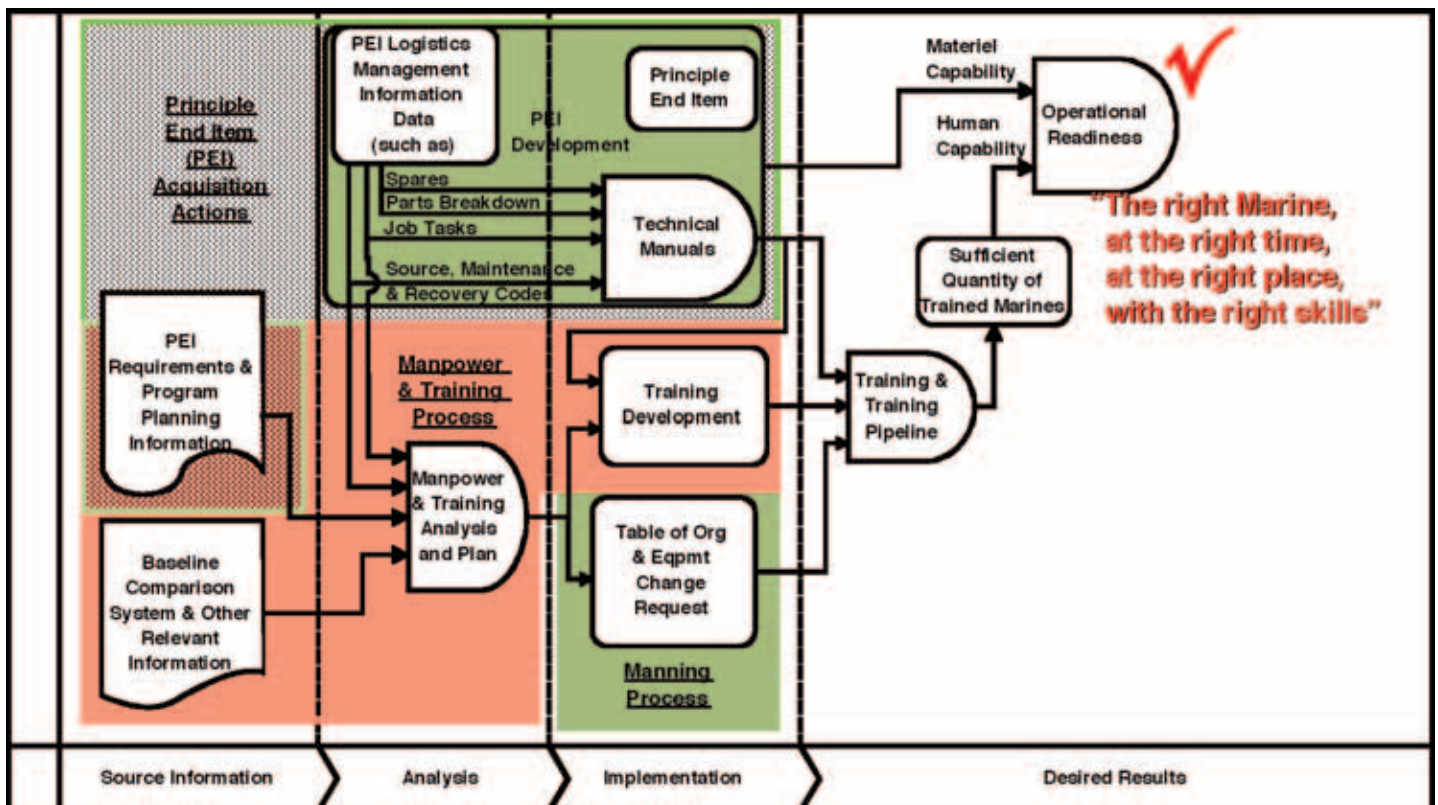




MCSC Manpower and Training Process

The Marine Corps Systems Command (MCSC) Manpower and Training (M&T) Process was approved on 19 December 2002. It is a sub-process under the Acquisition Logistics Core Process. It aligns with and supports the core process. The M&T Process outlines planning, analysis and implementation procedures for defining manpower requirements and providing training solutions for systems acquired by MCSC. The M&T Process is mandatory for all MCSC acquisition and product improvement programs. It is the responsibility of the program logistician to execute the process through a M&T Integrated Product Team in coordination with other agencies and commands; and especially with MCCDC Training and Education

Command and Total Force Structure. The Assistant Commander for Acquisition Logistics is the process owner, and Program Manager for Training Systems is the implementation manager of the process. The graphic below shows the relationship of the M&T Process to the Principle End Item Development and the desired results of these combined efforts. Detailed information about the process is available electronically through the MCSC TIGER Acquisition Logistics Knowledge Center or the PM TRASYS Web site (<http://www.marcorsyscom.usmc.mil/sites/pmtrasys>). For more information or assistance with M&T Process, contact PM TRASYS at 407-381-8762 or PMTRASYS.MCSC@NAVY.MIL.





Fielded Marine Corps Ground Training Systems Listing

PM TRASYS is responsible to assist and provide life-cycle operation and support for fielded Marine Corps Ground Training Systems. As described previously, the Training Systems Operational Support Division provides this function. The Operational Support Division maintains inventory management, documentation control, change management (including life extensions and upgrades) as well as training systems retirement and disposal functions and services. Many life-cycle management functions and most of the training systems information are available via the Training Information Electronic Resource System (TIERS) at the PM TRASYS Website (<http://www.marcorssyscom.usmc.mil/sites/pmtrasys>). Listed below are many of the systems receiving various levels of life cycle operation and support from PM TRASYS and the TIERS. For further information, contact PM TRASYS at 407-381-8762 or PMTRASYS.MCSC@NAVY.MIL.

Amphibious Training Demonstrator



The Amphibious Training Demonstrator is used to train personnel of the Navy, Army and Marine Corps in the doctrines, tactics, and techniques of all the phases of an amphibious operation.

Using video, slide shows, terrain and sea representations, movable models, and electronic lighting and effects the trainer can represent a complete amphibious assault.

The Amphibious Training Demonstrator is available at the following location: Expeditionary Warfare Training Group, Atlantic, Little Creek, Virginia.

Automated Electronic Classroom



Electronic Classrooms for individual or group courseware. These classrooms can also be used to provide Distance Learning.

Automated Electronic Classrooms are available at the following Marine Corps Bases:

Camp Lejeune, Camp Pendleton, Hawaii, Okinawa, Quantico, VA , Marine Air Ground Task Force Training Command, 29 Palms, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve sites.

Basic Electronics Trainer / Labvolt's Fault Assisted Circuit Equipment Trainer (FACET)



A desktop computer and printed circuit board interface base station system that instructs the student in basic electronics theories and principles through hands on lab and Interactive Courseware. This trainer augments the lecture portion of the Basic Electronics Course in which all Marine electronics repairmen and technicians must complete and constitutes over 40% of the 51 training day course.



The Basic Electronics Trainer/Labvolt's Fault Assisted Circuit Equipment Trainer (FACET) is available at the following location: Marine Corps Communications and Electronics School (MCCES) 29 Palms, Ca.

Cardiopulmonary Resuscitation (CPR) Learning System



Used to provide cardiopulmonary resuscitation training.

The Cardiopulmonary Resuscitation (CPR) Learning System is available at the following location(s): Marine Corps Base, Camp Lejeune, NC.

Combat Vehicle Training System (CVTS)



The CVTS presents a computer generated battlefield to include targets, target signatures, and weapon effects that provides the Marine Corps the ability to train LAV-25, M1A1, and AAV crewmembers to approved standards of combat skills and readiness. The end state system is a high fidelity networked training system supporting individual, collective (crew, section, and platoon), combined arms, and joint training scenarios. CVTS provides gunnery proficiency, weapons platform familiarization, and tactical training. CVTS provides a measurable improvement in individual, crew, and unit level tactical proficiency levels for tank, light armored reconnaissance and amphibious assault battalions. The system trains target acquisition, identification, and engagement with the weapons appropriate for each

platform. Aural cues presented to the crews consist of realistic environmental, platform, and weapon sounds. An instructor/operator controls the exercise selection; observe crewmember actions, and conducts after-action reviews with the crews.

Sixteen CVTS - M1A1's have been fielded and are available at the following locations: fielded at Marine Bases Camp Lejeune, NC, Camp Pendleton, CA, the Marine Air Ground Task Force Training Command, 29 Palms and other Marine Force Reserve locations.

Combined Arms Staff Trainer (CAST)



The Combined Arms Staff Trainer (CAST) is a computer-aided simulation system used to train Marines in the proper employment and coordination of fire support assets in support of the ground commander's scheme of maneuver. The CAST is used to emphasize the detailed planning and coordination required to develop, execute, and validate a particular scheme of maneuver and its fire-support plan. The process utilized in the CAST requires each echelon in the fire support command to communicate and properly execute their respective functions before the requested support materializes. The trainer is used to allow the using units to prepare, test and refine operation orders, including supporting arms requirements, in response to both friendly and opposing forces scenarios.

The Combined Arms Staff Trainer is available at the following locations: Marine Corps Bases Camp Lejeune, NC Camp Pendleton, CA, Okinawa, Japan, Hawaii and the Marine Air Ground Task Force Training Command, 29 Palms.



Enhanced Remoted Target System



Also Known as RETS, the Enhanced Remoted Target System (ERETS) is targetry equipment which, when installed on standard ranges, supports marksmanship, gunnery, and combined arms training. ERETS consists of stationary and moving infantry and armor target hardware with related control hardware and software. A range control station provides automatic and manual control of target mechanisms, detects and accumulates target hit data, and prints a permanent record for evaluation of the firer's or crew's performance. Simulators adding realism to training scenarios include infantry night muzzle flash, armor target kill, and infantry and armor hostile fire simulators.

The RETS range system may include the following major components: Infantry Target Mechanism (ITM), Infantry Moving Target Carrier (IMTC), Rifle Fire Simulator (RFS), Range Control Station (RCS), Target Holding Mechanism Tank Gunnery (THMTG), Armor Moving Target Carrier (AMTC), Gunfire Simulator (GUFS)

Part of ERETS - A moving version of the Infantry Target Mechanism (ITM) that consists of hard-wire controlled infantry pop-up target mechanism. Allows Marines to engage a moving target.

Enhanced Remoted Target Systems are employed on several Live fire and Simulation Training Ranges at Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms.

Improved Moving Target System (IMTS), Stinger



The trainer provides training to STINGER missile gunners by presenting aircraft targets to students in a controlled training environment, which represents types and flight paths that may be encountered in a defined area.

The Improved Moving Target System (IMTS) Upgrade is currently being fielded at the

following locations: Marine Corps Base Camp Pendleton, Ca, Marine Corps Air Station, Cherry Point, NC, Marine Corps Base, Okinawa, Japan and Marine Corps Reserve Center, Marietta, GA.

Indoor Simulated Marksmanship Trainer-Enhanced (ISMT-E)



A one screen, computer-based system designed to train students in weapon operation and proficiency, with realistic simulated weapons, which duplicate the form, fit, and function of the service weapon. The simulated weapons are equipped with laser devices that simulate the firing of ammunition. Training exercises in lanes/marksmanship and computer-generated imagery (CGI) graphics modes are included in the delivered system. Additional training scenarios may be created or edited by the instructor on the system PC.

An Infantry Squad Trainer (IST) is configured by linking 3 ISMTs together. It permits 15 Marines to train in a collective environment.

Indoor Simulated Marksmanship Trainer- Enhanced (ISTM-E) is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, and other Active and Reserve Marine Operational Forces and Supporting Establishments sites throughout the world.



Infantry Tool Kit



The Infantry Tool Kit (ITK) is computer based gaming centered on the individual combat Marine. Various scenarios are available from free play to specific training skits. Each player also has various weapons available. In some cases, players/stations can be networked so that training can occur as fire-teams or squads, with friendly and opposing forces or training can occur as individual Marines against each other or a computer generated enemy force. The chart provide title, training objectives, program status and equipment requirements for the various games within the suite.

The Infantry Tool Kit is available at the following locations: Camp Lejeune, Camp Pendleton, Hawaii, Okinawa, Quantico, VA, and Marine Air Ground Task Force Training Command, 29 Palms.

ITK Tools	Training Objectives	Program Status	Min/Max. System Requirements
Close Combat Marines	NCO, SNCO, CO Grade Tactics	Complete, playable	Class A,B
Combat Decision Range	NCO, SNCO, CO Grade, Field Grade Tactics	Modules 1-31 Complete	Class B,C
Logistics CSSE	SNCO, CO Grade, Field Grade Logisticians	In development, non-playable	Class B,C
MAGTF XXI	SNCO, CO Grade, Field Grade Tactics	In development, playable	Class B,C
VBS-1	NCO, SNCO, CO Grade Tactics	Complete, playable	Class B,C
First To Fight	NCO, SNCO, CO Grade Tactics	In development, non-playable	Class C
TACOPS MC Combat Engineer	NCO, SNCO, CO Grade, Field Grade Tactics	In development, playable	Class A,B
Close Combat Marines II	NCO, SNCO, CO Grade Tactics	In development, non-playable	Class C

Class A
Low reqs.
P3 800 Mghz
128 Megs RAM
32 Meg Graphics
LAN Card

Class B
Med Reqs
PV 1.3 Mghz
256 Megs RAM
64 Meg Graphics
LAN Card

Class C
High Reqs
PV 1.8 Mghz
512 Megs RAM
128 Meg Graphics
LAN Card

Institutional Conduct of Fire Trainer - Stinger



Used to train gunners in the operation of the HUMVEE mounted STINGER.

The Institutional Conduct of Fire Trainer- Stinger is available at the following locations: Marine Air Ground Task Force Training Command, 29 Palms and Marine Corps Air Station, Cherry Point, NC

Javelin Basic Skills Trainer (Indoor)



The Javelin Basic Skills Trainer (BST) (indoor) is used to provide target acquisition and target engagement practice in a classroom environment using simulated targets in lieu of an actual Javelin. The BST is a three-dimensional training device, consisting of an Instructor Station and a Student Station. A computer in the BST Instructor station generates battlefield scenes. The scenes provide a wide range of training situations to which the gunner must react using the Student Station. The exercises are developed from a set of terrain data (e.g. desert, rolling, built-up), scenarios (target paths), weather conditions (e.g. clear, rain), run times (1 to 7 minutes), and malfunctions (e.g. hang-fire, misfire). The Javelin BST is designed as a classroom or shipboard trainer.



The Javelin Basic Skills Trainer (Indoor) is available at the following locations: Marine Corps Bases, Camp Lejeune NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Javelin Field Tactical Trainer (Outdoor)



The Javelin Field Tactical Trainer (FTT) is used to provide target acquisition and target engagement practice in a range or field environment using simulated or real targets in lieu of using an actual Javelin. The FTT is used for situational training exercises (STX) or field training exercises (FTX). The FTT with Instructor Station (IS) adds the capability of monitoring, reviewing, and recording gunner activities. The FTT with or without the Instructor Station can be used to train and reinforce gunnery skills. A Javelin CLU is required, but is not a component supplied with the FTT. A brief description of FTT simulated round (SR) characteristics, capabilities, and features follows:

The FTT provides visual, aural, and physical cues associated with the Javelin Missile when engaging targets. Visual cues provided by the FTT include simulated Seeker imagery with the appropriate track gate and crosshairs. Aural cues include a simulation of launch signature effects of the Javelin Missile. Weight of the Simulated Round (SR), when connected to the CLU, provide the simulation of the Javelin Missile.

The Javelin Basic Skills Trainer (Outdoor) is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

LAV-25 Turret Trainer



The LAV Turret Trainer is a stand-alone training device that uses microprocessors, a videodisc player, and mockup assemblies to simulate the Light Armored Vehicle (LAV-25) turret operations and precision gunnery effects. This device was fielded in 1981.

The Light Armored Vehicle Full Crew Interactive Simulation Trainer (LAV-FIST) is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, and other Marine Corps Reserve Operational Forces.

Light Armored Vehicle Full Crew Interactive Simulation Trainer (LAV-FIST)



The Light Armored Vehicle Full-Crew Interactive Simulation Trainer (LAV-FIST) is an appended trainer for the LAV-25. It is designed to provide familiarization, proficiency, and sustainment training to the LAV-25 crew. The LAV-FIST will provide individual training for crewmembers, as well as, complete coordinated crew training. The system will provide training in the skill areas of gunnery, crew coordination, and tactics.

The Light Armored Vehicle Full Crew Interactive Simulation Trainer (LAV-FIST) is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, and other Marine Corps Reserve Operational Forces.



LVT7A1 Assault Vehicle Hydraulics



The purpose of the trainer is to demonstrate the operation of the winch and crane hydraulic systems of the LVT7A1 Vehicle and to provide a means of checking out the functions and capabilities of the system. It is intended to provide military personnel a basic understanding of components and their function in the operation of the crane and winch hydraulic systems, with special attention to malfunctioning possibilities and means to be taken for their correction.

The LVT7A1 Assault Vehicle Hydraulics is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVT7A1 Brake Linkage Trainer

The purpose of this trainer is to present a full size operable mockup of the brake linkage of the LVT7A1 vehicle so that the operating principles of the linkage and points of maintenance can be clearly understood. The trainer is used to provide military personnel a basic understanding of the operation of the vehicle brake linkages and to instruct correct maintenance procedures.

The LVT7A1 Brake Linkage Trainer is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVT7A1 Cummins VT903 Engine Cross Section

The trainer displays cutaway views of the VT903 engine with color-coded passageways for intake and exhaust air, coolant, fuel, and oil.

The LVT7A1 Cummings VT903 Engine Cross Section is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVT7A1 Cylinder and Fuel Injector



The purpose of this trainer is to demonstrate the operation of a Cummins Diesel Fuel Oil Injector. The mockup is enlarged (four times the actual scale) to enhance visibility in a classroom. It is intended to instruct the student in the theory and principles of operation of the Cummins Fuel Oil Injector. The trainer is used to provide military personnel a basic understanding of the operation of the PTD Fuel oil Injector Type G Fuel Pump and to instruct correct maintenance procedures.

The LVT7A1 Cylinder and Fuel Injector is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVT7A1 Fuel Control Linkage Trainer



The purpose of this trainer is to present an approximately full size operable mockup of the hand throttle and fuel control linkage of the LVT7A1 vehicle so that the principles utilized in operation of the linkages and adjustment points for maintenance of the equipment can be clearly understood. The trainer provides military personnel a basic understanding of the operation of the vehicle throttle and fuel control linkages and is used to instruct correct maintenance procedures.

The LVT7A1 Fuel Control Linkage Trainer is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.



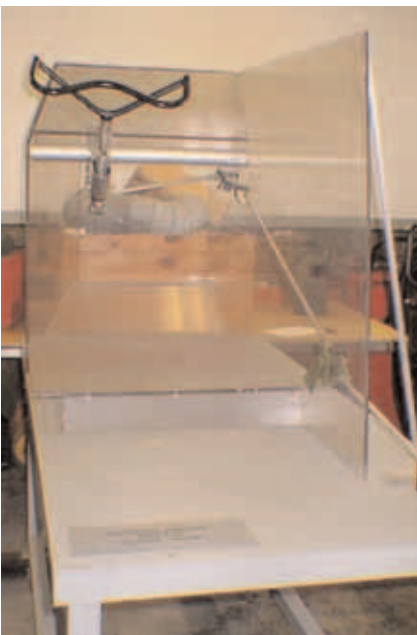
LVT7A1 Organizational Level Maintenance Trainer



The AAV7A1 Electrical/Hydraulic and STE/ICE System simulation models are used to support maintenance training for the AAV7A1 Vehicle. The purpose of the trainer is to develop proficiency in AAV7A1 Electrical, STE/ICE and Hydraulic system maintenance.

The LVT7A1 Organizational Level Maintenance Trainer is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVT7A1 Steering Linkage Trainer



The purpose of this trainer is to present an approximately full size operable mockup of steering linkages of the LVT7A1 vehicle so that the principles utilized in operation of the linkage and points of maintenance can be clearly understood. The trainer is used to provide military personnel a basic understanding of the operation of the vehicle steering linkages and to instruct correct maintenance procedures.

The LVT7A1 Steering Linkage Trainer is

available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVTP-7 Assault Vehicle Display Panel, Brake & Steering Mechanism



This trainer is an animated display panel depicting the brake and steer assemblies of the LVTP-7 from input at the operator controls to the final action at the output shafts. It presents the operation of the brake mechanisms by use of operable mockups of the movable brake rings and planetary gears as well as animated backlit power flow cutaway illustration from input through planetaries to output. Components on the display panel are clearly identified by color and black outline delineation. Sectionalized mockups of the hydrostatic unit and the steer and reverse mechanism, along with manually operable mockups of the driver's steering wheel, brake pedal, and speed range selector control are also provided on the face panel. Students can associate the actual movement of these components while observing the animation of related components in the illuminated and mockups.

The LVTP-7 Assault Vehicle Display Panel, Brake & Steering Mechanism is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.



LVTP-7 Assault Vehicle Display Panel, Transmission Hydraulic System



This trainer is an animated display panel depicting a stylized diagram of the hydraulic flow operation, an animated cutaway view of the converter assembly, a mockup of the speed control unit, and a switching control panel.

The trainer is designed to provide a simplified interpretation of the sequential steps which occur in the operation of the hydraulic system of the LVTP-7 transmission.

The LVTP-7 Assault Vehicle Display Panel, Transmission Hydraulic System is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVTP-7 Assault Vehicle Display Panel, Transmission Speed Change Assembly

This trainer is a backlit animated display panel depicting a rendered diagram and a static perspective view with color-coded components of the speed change assembly, together with a sectionalized mockup of the forward-reverse clutch assembly. Nomenclature identifying components and an operable mockup of the gear selector of the LVTP-7 control console are provided on the display panel. The sequential steps in the functioning of the speed change mechanism in the various speed settings are presented on the diagram through animated lighting techniques. Color and arrows are used to simulate animation and direction of movement in the clutch assembly.

The LVTP-7 Assault Vehicle Display Panel, Transmission Speed Change Assembly is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVTP-7 Assault Vehicle Take Off Power



The trainer is used in the classroom for basic training in the operating principles and general arrangement of components of the LVTP-7 PTA mechanism. The trainer is also used to demonstrate the operation of the LVTP-7 power takeoff assembly, showing the interrelationship of components to each other and to the input gear and output yokes. Trainees are Marine Corp maintenance personnel.

The LVTP-7 Assault Vehicle Take Off Power is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

M31A1 POP-UP TARGETS



Older style pop-up infantry target that is hard-wired and programmable for hits-to-kill. Provides Marines with individual targets to engage with small arms.

M31A1 Pop-Up Targets are employed on several Live fire and Simulation Training Ranges at Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.



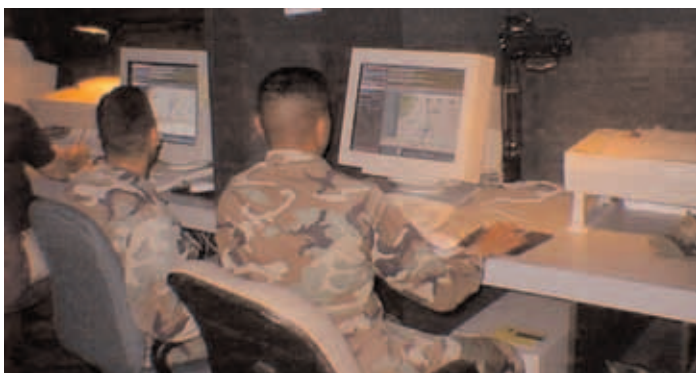
M32A1 Pneumatic Mortar Trainer



The subcaliber mortar trainer is a pneumatically operated attachment designed to adapt a 60-mm or 81-mm mortar to fire the 25-mm training projectile on a 500-inch, 1,000-inch, or 2,000-inch range. The trainer is a unit packed in a case complete with: a projectile rack with twenty 25-mm training projectiles; a barrel and valve assembly, to adapt the operational mortar to receive the 25-mm projectiles and to release compressed air charges for simulating operational mortar fire; a bottle and valve assembly, to provide compressed air supply; a regulator assembly to control the pressure released for each charge; and a quick disconnect hose assembly, for attaching the air supply to the barrel and valve assembly.

The M321A1 Pneumatic Mortar Trainers are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

MAGTF Tactical Warfare Simulator (MTWS) - Battle Simulation Center



MTWS provides interactive, multi-sided, force-on-force, real-time modeling and simulation for air, ground, surface, and amphibious operations. The system is also capable of integrating with other service models of the Joint Training Confederation (JTC) through the Aggregate Level Simulation Protocol (ALSP). MTWS can operate in Live and Constructive training environments.

MTWS is the Marine Corps advanced tactical combat simulation designed as a decision support system during training exercises to augment Marine Corps Command and Control systems. MTWS provides interactive, multi-sided, force-on-force, real-time modeling and simulation with stand-alone tactical combat scenarios for air, ground, surface, and amphibious operations. The system supports tactical decision-making, and evaluation; operational planning and evaluation; and global war gaming.

MTWS is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Medium Tactical Vehicle Replacement Training System (MTVR-TS)



The MTVR-TS is a combined operator and maintenance training system designed to support the Marine Corps new medium tactical vehicle. The MTVR-TS is comprised of a mix of operator-driver simulators (ODSs), electronic classrooms (ECs), and interactive EC-based courseware that together provides the basis for all Motor Transport (Occupational Field 35XX) training in the Marine Corps.

The Motor Vehicle Operator Course (MVOC) is conducted at Fort Leonard Wood, MO and teaches the principles of operating vehicles utilizing the ODSs and ECs. The Automotive Organizational Maintenance Course (AOMC) is conducted at Camp Johnson, NC and teaches the principles of vehicle maintenance utilizing the ECs and actual vehicles. Additionally, ODSs located at Camp Courtney, Okinawa support sensitive, on-island driver training for III MEF operators in Japan.



Minor Non-Standard Ground Training Devices



These items produced in the Minor Device line provides instructional support to the Schools of Infantry, Recruit Depots and support combat readiness by being available to other units through their local Combat Visual Information Centers. These training devices such as the Climbing Wall, PITS, models and mockups, and firearms enhance basic occupational and combat skills including tactics, weapons instruction and proficiency. The items are intrinsically of a small dollar (both unit and total cost) therefore various items are procured through the Minor Device line.

Minor Non-Standard Ground Training Devices are available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Mobile Firearms Trainer (MFT)



The MFT is a trailer-sized live fire range that includes a digital system for displaying targets and scenarios on a screen. Acoustic sensors located alongside the screen to accomplish scoring.

The Mobile Firearms Trainer is available at Marine Corps Base, Quantico, VA.

Modular Amphibious Egress Trainer (MAET)



The modular trainer provides underwater disorientation and egress training for non-aircrew flyers, waterborne and other vehicle crews and passenger. It simulates underwater disorientation caused by rapidly sinking vehicles and replicates aviation platforms such as the CH-46, CH53 and MV-22, and other vehicles such as the LAV-25, AAV and EFV.

The Modular Amphibious Egress Trainer (MAET) is available at Marine Corps Base, Hawaii and Okinawa, Japan.

Moving Target System, Lejeune Range Golf 5



Moving Tank Target. The Moving Target System is available at Camp Lejeune, NC.



Multiple Integrated Laser Engagement System 2000 (MILES 2000)



Provides a family of low power, eye safe lasers which simulates the direct fire characteristics of infantry assault, armor, anti-armor mechanized weapons system and provides the gunner with hit or miss determination. MILES 2000 is designed to be used by MAGTF as a force-on-force engagement simulation training system. This program is nearing the end of the LRIP phase which began June 1995. LRIP covered Marine Corps unique items include fielding of 10 reinforced battalion sets.

Components:

- Individual Weapon Systems (M16, M249, M2, M40A1, M240G)
- Anti-armor Weapons (AT-4, SMAW, TOW)
- Combat Vehicle Systems (M1A1, LAV family, AAV family)
- Independent Target Systems (ITS) for structures, Combat Support Vehicle Systems (M900, LVS, HMMWV)
- Pyrotechnic Devices (Main Gun Signature Simulator)
- Controller Device/Training Data Transfer Device (CD/TDTD)
- MILES Target Interface Device (moving and stationary targets)
- Automated Small Arms Alignment Fixture (ASAAF)

The Multiple Integrated Laser Engagement System 2000 is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Portable Infantry Target Systems (PITS)



PITS are a live fire target system with automatic scoring and are programmable to support various scenarios. This system will be used to train personnel in marksmanship using a realistic threat oriented environment. It is lightweight and one-man portable. Each PITS consists of 60 portable remote controlled target lifters, a battery recharging system and four or six hand-held VHF controllers that are capable of controlling lifters out to a distance of 1500 meters.

Portable Infantry Target Systems (PITS) are available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, CA and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Precision Gunnery System (PGS)



The Precision Gunnery System (PGS) is a LAV-25 mounted training device that assists the LAV crew in gaining and improving proficiency in gunnery skills without expenditure of live ammunition. Gunnery and tactical training can be conducted anywhere the eye-safe laser firing is permitted. PGS provides the crew with visual and sound effects that accurately simulate real firing conditions.

The PGS is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan and the Marine Air Ground Task Force Training Command, 29 Palms, CA.



Precision Gunnery Training System 2 - TOW Indoor



This trainer is used to train Tube-launched, Optically tracked, wire-guided (TOW) gunners from novice through advanced (sustainment) levels of skill.

The PGTS 2 - TOW Indoor is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Precision Gunnery Training System LAV-AT

The trainer provides LAV-AT gunner indoctrination, tracking instruction, practice, and qualification for the TOW (Tube-launched, Optically-tracked, Wire-guided) Weapons System. The trainer consists of an instructor console, LAV-AT interface. A target set (including vehicle adapters), and a missile simulation round. The missile simulation round is the same size, shape, and approximate weight as the tactical TOW missile.

The PGTS LAV-AT is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, and Quantico, VA.

Precision Gunnery Training Systems - TOW - Field Tactical Trainer (FTT) (Outdoor)



The AN/TWQ-T5 Precision Gunnery Training System TOW Outdoor (PGTS TOW Outdoor) is used to teach precision gunnery skills to TOW gunners in the field. This training can occur at designated ranges, general outdoor areas, or representative tactical environments. The Outdoor TOW system can be used for both initial gunner familiarization in an outdoor environment as well as for gunner skill enhancement and progression.

The PGTS - TOW (FTT) Outdoor is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Radar Fundamentals Trainer

This trainer is a miniature scale live functional radar system used to teach the fundamentals of analog and digital radar theory. Students will build the radar as they progress through the course, learning the various components and how they interact as well as learning principles of radar jamming from natural and electronic warfare sources.

The Radar Fundamental Trainer is available at the following location: Marine Air Ground Task Force Training Command, 29 Palms, and CA.



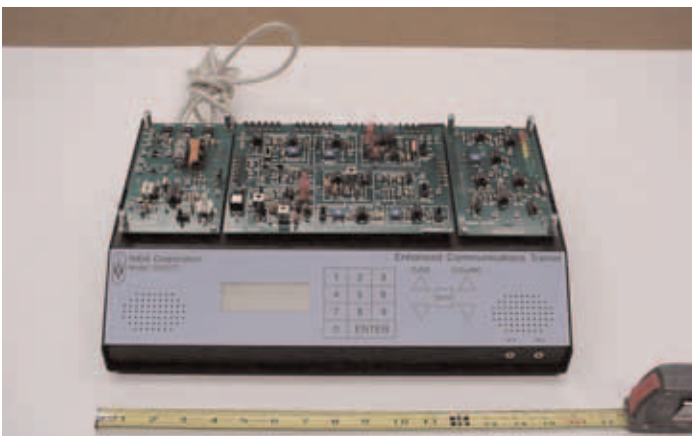
Radio Maintenance Trainer / NIDA model 205A



The NIDA model Radio Maintenance Trainer is used to enhance the trainee's understanding of troubleshooting techniques for basic radio circuitry. The trainer has two basic configurations: AM Transmitter Trainer & Narrow Band FM transceiver Trainer. The NIDA trainers are used as part of the Marine Corps Communications Electronics School (MCCES) formal training.

The Radio Maintenance Trainer/NIDA model 205A is available at the following location: Marine Air Ground Task Force Training Command, 29 Palms, CA.

Radio Maintenance Trainer / Nida Model 205ECT



The Nida Model 205 Enhanced Communications Trainer (ECT) is designed to provide AM Receiver, FM Stereo Receiver, AM Transceiver, Single Side Band, and Narrow Band FM hands-on operation, alignment, and troubleshooting practice in the classroom environment. The 205ECT is a fully functional transceiver with power supply, antenna, phase lock loop, audio amplification, frequency control, modulation, LCD, and interchangeable, transmitter/receiver circuitry.

The Radar Maintenance Trainer/NIDA Model 205ECT is available at the following location: Marine Air Ground Task Force Training Command, 29 Palms, and CA.

Simunition FX Adaptor Kits

These are a series of user-installed conversion/modification kits that allows various infantry weapons to fire at short range, a low velocity marking ammunition. The FX adaptors kits preclude the weapon from firing live ammunition. This system allows for realistic Force on Force training by providing normal environmental cues, immediate target feedback, non-toxic primers, and a non-toxic marking medium. Adaptor kits are available for the M16A2, M9, M1911, and MP5.

Simunition FX Adaptor Kits are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palm, CA.

Small Arms Gunfire Flash Noise Simulator (24V)

This simulator generates flash and sound for realistic simulation of small arms gunfire.

The Small Arms Gunfire Flash Noise Simulator (24V) is available at MCB Okinawa, Japan.

Small Arms Gunfire Noise Simulator



This device simulates small-arms gunfire (rifle or machinegun noise) for infantry training, thus adding realism to day or night maneuvers, and conditioning trainees to the sound of operational small caliber weapons. The device consists of a gun simulator, a gas supply, and an AC to DC converter. Outwardly, the device resembles a real machinegun. The simulator may be fired locally or remotely. It can fire single shots or bursts using a metered amount of oxygen and propane that is ignited inside the barrel by a spark plug.

Small Arms Gunfire Noise Simulators are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan and the Marine Air Ground Task Force Training Command, 29 Palms, CA.



Special Effects Small Arms Marking System (SESAMS)

SESAMS is a user-installed M249 Squad Automatic Weapon (SAW) conversion/modification kit that allows the M249 SAW to fire, at short range, a low velocity marking ammunition, while precluding the weapon from firing live ammunition. The system provides normal environmental cues, immediate target feedback, non-toxic primers, and a non-toxic marking medium.

SESAMS are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Stationary Armor Target / Tank Target Mechanism



The Tank Target Mechanism is used for training in the use of anti-armor weapons. It provides the capability of raising and lowering armor target silhouettes through a 90-degree arc and indicates when hits on target silhouettes are made. With the addition of the Pyrotechnic Device the system can also simulate firing hostile and/or target kill. The system can either be portable or hardwired and is designed for use in various terrains.

Stationary Armor Target / Tank Target Mechanism are employed on several Live-Fire and Simulations Ranges at Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Stationary Infantry Target System (SITS) / Infantry Target Mechanism (ITM)



SITS and ITMs are pop-up infantry targets used at various RETS ranges. All are hardwired and programmable for number of hits to kill. Target will fall once that number has been reached. Provides Marine with a stationary individual target to engage.

SITS/ITMs are employed on several Live-Fire and Simulations Ranges at Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Tactical Air Operations Central Trainer Van



This trainer provides simulated tactical conditions and environments for Marine Corps Tactical Air Operations Central (TAOC). It also gives realistic training for radar operators and weapons controllers in threat evaluation, weapon assignment and control, and air traffic control.

The Tactical Air Operations Central Trainer Van is available at the following location: Marine Air Ground Task Force Training Command, 29 Palms, CA.



Tactical Radar Threat Generator



The Tactical Radar Threat Generator (TRTG) is used by Marine Corps Air Ground Combat Center Tactical Training and Exercise Control Group (TTECG) during Combined Arms Exercises. It is used to enhance aviation training by simulating an enemy “radar threat” for pilots participating in the exercise.

The Tactical Radar Threat Generator (TRTG) is available at the following location: Marine Air Ground Task Force Training Command, 29 Palms, CA.

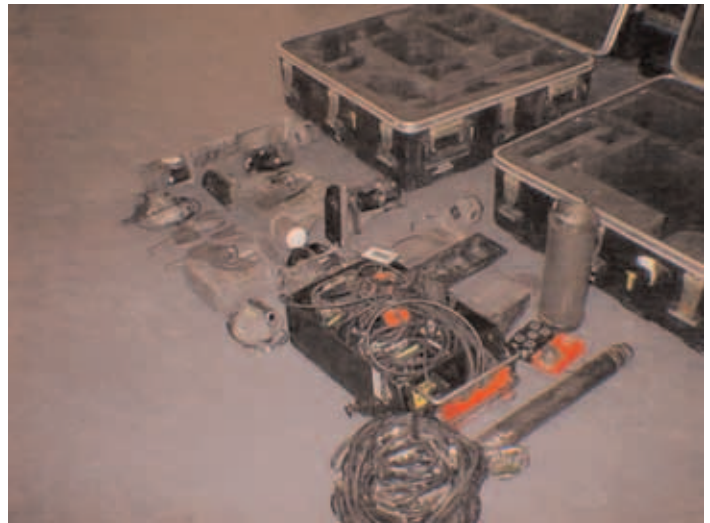
Tank Gunfire Simulator (TGS) - Hoffman



The Tank Gunfire Simulator (TGS), also known as the Hoffman Device, is used for force on force MILES/TWGSS training. With the aid of pyrotechnic charges, the device is to simulate, both visibly and audibly, the firing of a tank main gun. The TGS can be mounted on 90 to 152 mm gun barrels. Each simulator can be loaded with up to nine electrically ignited pyrotechnic charges. The TGSs are checked out to customers who are then responsible for transporting, employing and operating the devices. The customer is also responsible for ordering, transporting, and loading of the pyrotechnics.

The Tank Gunfire Simulator (TGS), is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palms, CA and other Marine Reserve Operational Forces.

Tank Weapon Gunnery Simulation System (TWGSS)

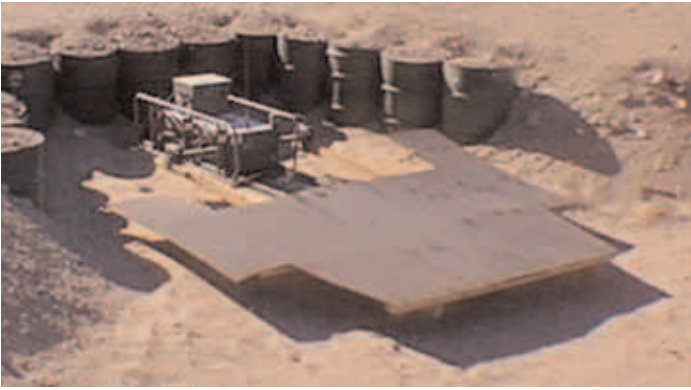


The TWGSS is a tank-mounted training device that assists the crew in gaining and improving proficiency in gunnery skills without expenditure of live ammunition. Gunnery and tactical training can be conducted anywhere the eye-safe laser firing is permitted. TWGSS provides the crew with visual and sound effects to accurately simulate real firing conditions. TWGSS simulates the firing of the tank's main gun, the firing of the coaxially mounted machine gun and the effects of a target vehicle being hit. The TWGSS consists of three subsystems: firing system, target system, and Training Data Retrieval System (TDRS). TWGSS is interoperable and compatible with PGS, MILES, Laser Target Interface Devices (LTIDs), Thru-Sight Video (TSV) System, and Improved Tank Gunfire Simulator (ITGS)(Hoffman Device).

The Tank Weapon Gunnery Simulation System (TWGSS) is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.



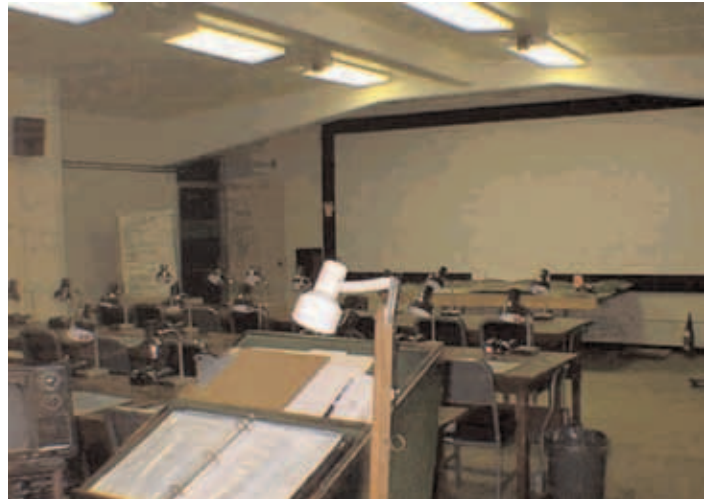
Target Holding Mechanism, Tank Gunnery (THMTG)



A predecessor to the Tank Target Mechanism, the THMTG is used to train the use of anti-armor weapons. It provides the capability of raising and lowering armor target silhouettes through a 90 degree arc and indicate when hits on target silhouettes are made. With the addition of pyrotechnic devices, the system can also simulate hostile fire and/or target kill. The system can be portable or hard-wired on a range. When not hard-wired, the Offensive Range Controller (ORC) radio controller is used to control and program targets remotely.

Target Holding Mechanisms, Tank Gunnery (THMTG) are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Training Set Fire Observation (TFSO)



The TFSO provides forward observers with observation post pre-range and continuation training in the call for and adjustment of artillery fire. TSFO is a computer-based trainer which realistically simulates the visual and aural effects of artillery fire on terrain views projected on a classroom screen. This replicates the effects that would normally be seen and heard at the observation post. A variety of targets can be simulated including machine guns, wheeled and tracked vehicles and helicopters. Replay facilities are included, so that fire missions can be reviewed. This ensures that there is a maximum effective use of live ammunition when firing on the range. The TSFO may also be used for basic and advanced map reading exercises, position location, basic terrain recognition, and tactical exercise pre-planning.

The TFSO is available at the following locations: Marine Corps Bases: Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, Marine Air Ground Task Force Training Command, 29 Palms, CA and the Expeditionary Warfare Training Command, Coronado, CA.





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